

1. PURPOSE AND NEED FOR AGENCY ACTION

This section introduces the purpose and scope of the Environmental Impact Statement (EIS). The section also summarizes the project background and other aspects, including the site and surrounding area description, the project components and objectives, identification of environmental issues associated with the Proposed Action, and an explanation of the NEPA process.

1.1 Introduction

This EIS has been prepared by the United States Department of Energy (DOE), in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 USC 4321 et seq.), to evaluate the potential environmental impacts from providing federal financial assistance for the construction and demonstration of an approximately 98 megawatt (MWe net) power plant and cement manufacturing facility (hereafter referred to as the “WGC Project” or “Co-Production Facility”). The lead organization for the federal action, the National Energy Technology Laboratory (NETL), is a multi-purpose laboratory owned and operated by DOE. NETL has a mission to solve the environmental, supply, and reliability constraints of producing and using fossil energy resources to promote a stronger economy and a more secure future for America, while maintaining a healthy environment. The DOE goal for this project is to commercially demonstrate an innovative design for an atmospheric pressure, circulating fluidized-bed (ACFB) power plant that would generate electricity and steam using coal refuse (i.e., ‘gob’) as fuel while using the ash to produce cement that can be used in the manufacture of structural building blocks and other construction products.

1.2 Clean Coal Power Initiative (CCPI)

Coal accounts for over 94 percent of the proven fossil energy reserves in the U.S. and supplies over 50 percent of the electricity vital to the nation’s economy and global competitiveness. Nearly half of the nation’s electric power generating infrastructure is over 30 years old. These aging facilities are or will soon be in need of substantial refurbishment or replacement. Additional capacity must also be put in service over the next several decades to keep pace with the nation’s ever-growing demand for electricity. Given heightened awareness of environmental stewardship, while at the same time meeting the demand for a reliable and cost-effective electric power supply, it is clearly in the public interest for the nation’s energy infrastructure to be upgraded with the latest and most advanced commercially viable technologies to achieve greater efficiencies, environmental performance, and cost-competitiveness. Before any technology is likely to be considered for widespread commercial application, it must be demonstrated. The ability to showcase an operating commercial-scale facility rather than a conceptual or engineering prototype provides persuasive stimulus supporting technology acceptance and replication.

However, the conservative nature of the electric power generation sector, stemming from its traditional status as a “public good,” renders it generally hesitant to take on the risk associated with technology demonstration and to adopt innovative and less familiar technologies in the absence of strong economic incentives or firm legal requirements. DOE implements the Clean Coal Power Initiative (CCPI) to encourage clean coal technology demonstration.

Public Law 107-63, enacted in November 2001, first provided funding for the CCPI. CCPI is a multi-year program to accelerate the commercial readiness of advanced multi-pollutant emissions control, combustion, gasification, and efficiency improvement technologies to retrofit or re-power existing coal-based power plants and for deployment in new coal-based generating facilities. CCPI implements national energy policy to advance the nation’s energy security and energy independence by overcoming technical, environmental, and economic challenges associated with coal so that the nation

can continue to rely on its abundant domestic reserves of coal for electric power generation (NETL, 2006). Clean coal technologies emerging from the program contribute toward satisfying the following national technological and environmental initiatives:

- *Clear Skies Initiative to cut nitrogen oxides (NO_x), sulfur dioxide (SO₂), and mercury (Hg) emissions by 70 percent over the next 15 years;*
- *Global Climate Change Initiative to cut greenhouse gas intensity 18 percent by the year 2012;*
- *Hydrogen Fuel Initiative to reverse the growing dependency on foreign oil by developing the technologies and infrastructure to produce, store, and distribute hydrogen (H₂); and*
- *FutureGen Initiative to establish the technical feasibility and potential economic viability of coproducing electricity and H₂ fuel from coal while capturing and sequestering carbon dioxide (CO₂) and greatly reducing other air emissions.*

Accelerating commercialization of clean coal technologies also positions the U.S. to supply advanced coal-based power generation and pollution control technologies to a rapidly expanding world market. Congress provided for competitively awarded demonstration projects in the CCPI. These are not federal projects seeking private investment. Under the CCPI solicitation, private entities propose projects that meet their needs and those of their customers and also further national goals and objectives embodied in the CCPI. Projects within the CCPI portfolio become private-public cost-sharing partnerships that satisfy a wide set of industry and government needs. Industry satisfies its short-term need to retrofit or re-power a facility or develop new power generating capacity for the benefit of its customers. By providing financial incentive for emerging clean coal technologies, the government supports the verification of commercial readiness leading toward the long-term objective of transitioning the nation's existing fleet of electric power generating plants to the next generation of more efficient, environmentally sound, and cost competitive facilities (NETL, 2006).

At current consumption levels, it is estimated the U.S. has about 240 years of recoverable coal reserves.

Project applications are evaluated against programmatic criteria which were developed by DOE specifically for CCPI projects. These criteria include the following:

- *Technical Merit – Scientific and engineering approach, data and other evidence to support technology claims, readiness of the technology, and potential benefits such as improved system performance, reliability, environmental performance, and costs;*
- *Project Feasibility – Appropriateness of proposed site, including availability and access to water, power transmission, coal transportation, facilities and equipment infrastructure, and permits; the ability of the proposed project team to successfully implement the project; and the soundness and completeness of the statement of work, schedule, test plan, milestones, and decision points;*
- *Commercialization Potential – Commercial viability relative to the scale of the project, potential for broad market impact and widespread deployment, and soundness of the commercialization plan, including experience of the project team;*
- *Adequacy of the Financial and Business Plan – Financial condition and capability of proposed funding sources, priority placed by management on financing the project, and adequacy of the applicant's financial management system; and*
- *Adequacy of the Repayment Plan – Ability to repay the government co-funding.*

Consistent with the Council on Environmental Quality (CEQ) NEPA regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508) and DOE regulations (10 CFR Part 1021), the review of preliminary environmental, health, safety, and socioeconomic information is considered during the selection process, particularly with respect to technical merit and feasibility. This is the first of two principal elements within the overall strategy under the CCPI for satisfying NEPA requirements. Program policy factors are also considered to ensure that the portfolio of projects selected represents the most appropriate mix to achieve program objectives. These factors include program budget constraints, technological diversity, diversity of U.S. coals, and representation from a broad geographical cross-section of the country. As the second element of the overall CCPI NEPA compliance strategy, once a project application has been selected for negotiation, the applicant must prepare detailed technology- and site-specific environmental information. This environmental information, which DOE must validate, serves as the source material for government analyses and preparation of NEPA documentation.

As industry-led projects, the industry participants are responsible for project definition as well as design, construction, and operation of the facilities. DOE is responsible for: (1) ensuring that the industry participants execute projects pursuant to the terms and conditions established in the cooperative agreements; (2) monitoring project activities; (3) reviewing project performance and documentation; (4) providing technical advice to ensure that critical programmatic issues are addressed; and (5) ensuring that project costs are allocable and allowable. The government also participates in decision-making at major project junctures. DOE issued the first CCPI co-funding opportunity announcement (Round 1) in March 2002. A second co-funding opportunity announcement (Round 2) was issued in February 2004. A third co-funding opportunity announcement (Round 3) is anticipated to be issued in late 2007. These solicitations emphasized advanced coal-based power generation, including gasification, efficiency improvements (including improvements to centrifugal or cyclone collectors), optimization through neural networking, environmental/economic improvements, and Hg control.

Thirty-three project applications were received in response to Round 1. One of the projects selected for consideration was the WGC Demonstration Project, which would demonstrate the first commercial application of the compact, inverted cyclone CFB design in the U.S., which comprises a novel approach to converting some waste ash into commercial building products while also integrating power generation with remediation of coal refuse piles. These selections were based on individual merit. These selected projects were believed to represent the mix of technologies with the best potential to demonstrate progress toward DOE's objectives for CCPI Round 1. These objectives as stated in the Financial Assistance Announcement DE-PS26-02NT41428 were as follows:

- (1) demonstrate advanced coal-based technologies; and*
- (2) accelerate their deployment for commercial use.*

1.2.1 Federal Action

Under the proposed federal action, DOE has entered into a 5-year cooperative agreement with Western Greenbrier Co-Generation, LLC (WGC) to provide financial assistance through the CCPI Program for the development of a Co-Production Facility to be located at Rainelle in Greenbrier County, West Virginia (see Figure 1-1). Key features of the proposed facility are described in Chapter 2. The facility would be designed for long-term commercial operation (at least 20 years) following completion of the cooperative agreement. DOE support would be up to 50 percent of the development cost for the proposed facility. DOE's share of project costs would be paid back over a 20-year period following the one-year demonstration period based on a Repayment Agreement negotiated between DOE and WGC.

WGC is proposing to design, construct, and operate a 98 MWe net ACFB power plant that would generate electricity and steam by processing approximately 3,000 to 4,000 tons (2,720 to 3,630 metric tons) per day (tpd) (WGC, 2005a,b) of coal refuse as *a* fuel *resource*. A coal-fired rotary kiln coupled with the power plant would combine coal ash, limestone, and other waste materials into cement. The cement would be used by third parties at or adjacent to the site of the power plant to manufacture structural bricks, fast-setting specialty cements, and other products. The proposed power plant would be the first commercial application within the United States of a circulating fluidized-bed (CFB) combustor featuring a compact inverted cyclone design. This design could reduce the boiler system footprint and construction costs by approximately 40 percent, and would reduce construction time by approximately 10 percent. Additionally, the proposed Co-Production Facility would be the first commercial demonstration of cement manufacturing in the United States based substantially on waste materials, including ACFB ash.

In addition to electricity and cement, the proposed plant would co-produce steam and hot water and would serve as the anchor tenant for a new environmentally balanced industrial park. This ‘EcoPark’ would use hot water produced from the plant’s turbine exhaust to provide heat for buildings, agricultural activities, and aquaculture. Steam would be used for various heating and industrial processes, which might include hardwood drying. A 4-million ton (3.7 million metric tons) coal refuse site in Anjean, WV, and other coal refuse sites in the vicinity (e.g., Green Valley, Joe Knob, Donegan), would supply coal refuse fuel for the plant.

Excess combustion ash would be used to remediate acid drainage from the source coal refuse piles. If successfully demonstrated, this technology could be applied to many regions of the country for reclaiming coal refuse piles.

1.3 Purpose and Need

1.3.1 Purpose of Action

Under the CCPI Program, DOE has a mandate to promote the widespread commercial application of innovative technologies for more efficient and environmentally sustainable uses of coal by the power industry. The Proposed Action is intended to support this mandate through DOE’s cooperative agreement with WGC for the commercial demonstration of an innovative Co-Production Facility.

1.3.2 Need for Action

1.3.2.1 DOE Need

DOE needs to accelerate deployment of innovative clean coal technologies that can meet near-term energy and environmental goals, reduce risk in the business community to an acceptable level, and provide incentives to the private sector for innovative research and development projects directed at solving various energy supply problems. Since the early 1970s, DOE and its predecessor agencies have supported research and development programs that include long-term, high-risk activities for the development of a wide variety of innovative coal technologies through the proof-of-concept stage. However, the availability of a technology at the proof-of-concept stage is not sufficient to ensure its continued development and subsequent commercialization. Before any technology can be considered for commercialization, it must be demonstrated. The financial risk associated with technology demonstration is, in general, too high for the private sector to assume in the absence of strong incentives.

The CCPI Program was established in 2001 as a government-industry partnership implementing a recommendation of the President’s National Energy Policy (NEP) to increase investment in clean coal technology. Under the CCPI, candidate technologies are demonstrated at commercial scale to ensure proof

of operation and facilitate potential widespread application. Through the use of cooperative agreements as incentives, DOE intends to accelerate commercial deployment of innovative clean coal technologies.

The WGC Project is one of eight candidates selected for further consideration by DOE in January 2003 from among 33 applicants during the first round of proposals submitted for the Program. In addition to demonstrating the first commercial application of the compact, inverted cyclone CFB design in the United States, the project offers a novel approach to converting some waste ash into commercial building products while also integrating power generation with remediation of coal refuse piles.

1.3.2.2 WGC Need

WGC was established as a Limited Liability Company owned by the municipalities of Rainelle, Rupert, and Quinwood in Greenbrier County, West Virginia. Those municipalities are located in an economically depressed coal-mining region of southern West Virginia. Area businesses have been closing and job opportunities have been shrinking as the local coal and timber industries have continued to decline. The state is also challenged by mine land remediation and reclamation needs resulting from several hundred abandoned mine sites and from an estimated 300 to 400 million tons (270 to 360 million metric tons) of coal refuse. West Virginia Department of Environmental Protection (WVDEP) officials have characterized coal refuse as the state's primary environmental hazard, which will cost an estimated \$2 to \$3 billion for cleanup (WGC, 2002). WGC's need for the proposed Co-Production Facility is to:

- Create economic and social revitalization in western Greenbrier County through the development of an ecologically friendly and sustainable industrial park. This project might serve as a model for additional industrial parks regionally and in other comparable locations nationwide;
- Provide a low cost, reliable supply of steam and hot water for use by the industrial park;
- Provide electrical energy for export to the regional electric grid using coal refuse as fuel; and
- Demonstrate an economical coal refuse cleanup strategy by using the coal refuse as a fuel source and using the coal ash for both remediation of acid drainage from coal refuse piles and for the production of a cement material for use in the manufacture of building products by third parties.

1.4 NEPA Scoping Process

DOE determined that providing financial assistance for the construction and demonstration of the proposed Co-Production Facility constitutes a major federal action that may significantly affect the quality of the natural and human environment. Therefore, DOE prepared this EIS for use by decision-makers in determining whether or not to provide assistance. This EIS assesses the potential impacts on the natural and human environment of the Proposed Action and reasonable alternatives within the scope of the CCPI Program.

The EIS has been prepared in accordance with Section 102(2)(C) of NEPA, as implemented under regulations (40 CFR Parts 1500-1508) promulgated by the President's Council on Environmental Quality (CEQ) and as provided in DOE regulations for compliance with NEPA (10 CFR Part 1021). The EIS is organized according to CEQ recommendations (40 CFR Part 1502.10).

Figure 1-2 illustrates the opportunities for public involvement during EIS preparation. DOE published the Notice of Intent (NOI) to prepare the EIS in the *Federal Register* on June 3, 2003 (68 *FR* 33111) and sent copies to federal and state agencies. Publication of the NOI initiated the EIS process with a public scoping period (40 CFR Part 1501.7) for soliciting public input to ensure that (1) significant issues would be identified early and be properly studied, (2) issues of minimal significance would not consume excessive time and effort, (3) the EIS would be thorough and balanced, and (4) potential delays that could

result from an incomplete or inadequate EIS would be avoided. The scoping period extended through July 3, 2003.

The NOI invited public participation in the NEPA process and announced the scheduling of a scoping meeting on June 19, 2003, at Greenbrier West High School in Charmco, West Virginia near the location of the proposed project. Announcements also were printed in the “Legal Notices” section of *The Valley Ranger* on June 15, *The West Virginia Daily News* on June 15 and 17, and *The Charleston Gazette* on June 15 and 17 (see Appendix A: Public Scoping Meeting). DOE also mailed notifications to 50 federal, state, and local agencies, public officials, and non-governmental organizations. The public was encouraged to provide verbal comments at the meeting and to submit comments to DOE by the close of the EIS scoping period. The NOI and announcements provided appropriate addresses and phone numbers where comments could be communicated to DOE via the U.S. Mail, e-mail, toll-free telephone, or facsimile.

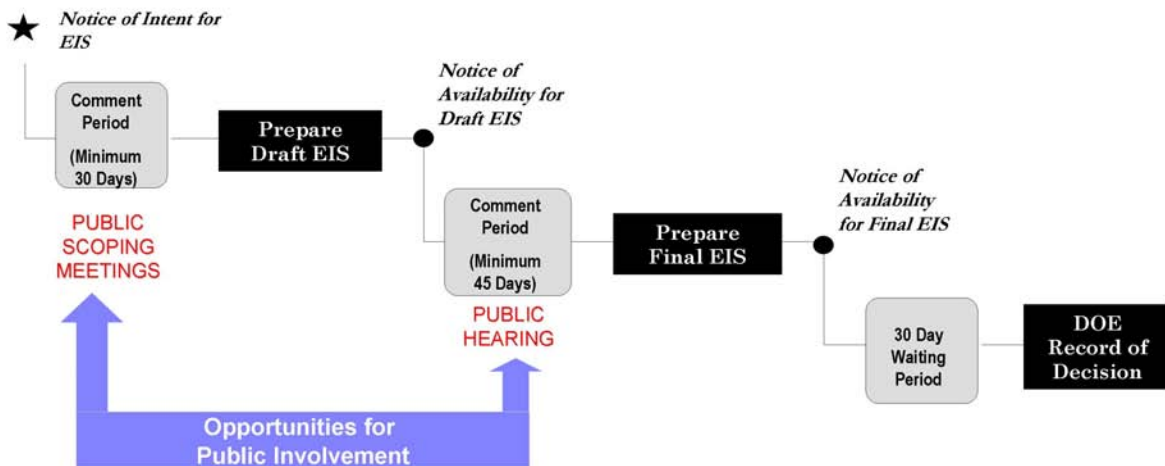


Figure 1-2. Opportunities for Public Involvement in the NEPA Process

A total of 228 individuals signed the attendance list for the public scoping meeting on June 19, 2003. The formal scoping meeting began at approximately 7:00 p.m. Eastern Daylight Time (EDT) and was adjourned at 9:14 p.m. The formal scoping meeting was preceded by an informal information session from 4:00 p.m. to 7:00 p.m., during which DOE and WGC representatives were available to answer questions about the project and EIS as depicted on graphic displays. Attendees were given handouts that included background information about the project, DOE, the CCPI Program, and the NEPA process, as well as comment cards (see Appendix A, Public Scoping Meeting – Transcripts and Comments Received). Individuals wishing to speak at the meeting were given an opportunity to sign up.

The formal scoping meeting began with a presentation by DOE representatives who explained the purpose of the meeting, the NEPA process, and the CCPI Program. Next, a representative of WGC presented general and technical information about the proposed project. Afterwards, the floor was opened for comments and prepared statements by members of the public and interested parties in attendance. A court reporter was present to ensure that all oral comments were recorded. There were 22 attendees who spoke at the meeting, and 44 individuals submitted comment cards.

In addition to the comments received during the formal scoping meeting, 44 comments were received on comment cards (post cards), 13 comments were received by telephone, eight comments were submitted via e-mail, and four letters were received via the U.S. Mail during the June-July 2003 public scoping period.. Included in these comments was a letter from the U.S. Department of the Interior, National Park

Service (NPS) providing scoping comments and indicating a desire to cooperate in preparation of the EIS (Appendix A). However, after discussion with DOE on the Proposed Action and the opportunities for cooperation, both the NPS the DOE agreed to cooperate informally. All submissions are maintained as part of the DOE Administrative Record.

A Notice of Availability of the Draft EIS was published by DOE in the Federal Register on December 4, 2006 (71 FR 70371 – 70372). Postcards announcing the availability of the Draft EIS and a public hearing were mailed to agencies, organizations, and individuals identified in the distribution list of the Draft EIS (Chapter 8). The Notice of Availability and postcards invited comments on the Draft EIS and participation in the NEPA process. Advertisements publicizing the public hearing were printed during the weeks of December 17 through 31, 2006 in the following newspapers: Charleston Gazette, Beckley Register-Herald, and West Virginia Daily News/Valley Ranger. DOE conducted the public hearing at the Western Greenbrier Middle School in Crawley, West Virginia on January 4, 2007 at 7 p.m. An information session was held at the same location prior to the hearing from 4 p.m. to 6:30 p.m. The public was encouraged to provide comments to DOE (the close of the comment period was January 18, 2007). In preparing the Final EIS, DOE considered all comments to the extent practicable.

DOE received oral comments from 20 individuals at the public hearing and written and emailed comments from 179 individuals of which 2 federal agencies, 10 state and local agencies/offices, and 10 non-governmental agencies/organizations were represented. A summary of the comments on the Draft EIS and DOE's consideration of the comments in developing this Final EIS is provided in Volume 3 ("Comments and Responses on the Draft EIS").

1.5 Scope of this EIS

1.5.1 Issues Identified Prior to the Publication of the Draft EIS

The scope of issues to be addressed in this EIS, and the significant issues related to the Proposed Action, were determined through several means including:

- The preliminary identification of issues by DOE as a part of the early project planning and internal scoping;
- The identification of issues and concerns expressed in comments received from the public and interested parties during the scoping process; and
- Additional issues identified by DOE as a result of state and federal agency consultation, data collection, data analysis, and other EIS-related efforts.

Table 1-1 lists the composite set of issues identified for consideration in the EIS. Issues are discussed and analyzed in this EIS in accordance with their level of relative importance. The most detailed analyses focus on air quality, transportation, noise, surface waters, flood hazards, and wetland impacts. As discussed in the following sections, comments received by DOE during the public scoping period generally aligned according to three categories:

- (1) The need for the proposed project;
- (2) Project aspects and alternatives that should be considered;
- (3) Concerns about specific environmental resources that may be affected.

Table 1-1. Issues Identified for Consideration in the EIS

Issues identified in the Notice of Intent
<ul style="list-style-type: none"> • Air quality: Potential impacts from air emissions during operation of the power plant and kiln, impacts on sensitive receptors, increases in smog and haze, water vapor plumes, dust from construction and transportation, and impacts on special-use areas • Noise and light: Potential impacts resulting from construction, transportation of materials, and plant operation • Traffic: Potential impacts resulting from the construction and operation of the proposed facility, including changes in local traffic patterns, deterioration of roads, traffic hazards, and traffic controls • Floodplains and wetlands: Potential impacts on flood flow resulting from earthen fills, access roads and dikes constructed within the floodplain; impacts to wetlands • Visual: Potential impacts associated with plant structures, views from neighborhoods, impacts on scenic views, impacts from water vapor plumes and haze; internal and external perception of the local community • Reclamation: Potential impacts resulting from recovery of coal refuse and from the reclamation of the coal refuse source sites; mitigation of acid drainage from coal refuse piles, and other environmental improvements • Water quality: Potential impacts resulting from wastewater utilization and discharge, water usage, and reclamation of coal refuse sites • Infrastructure and land use: Potential environmental and socioeconomic impacts of plant construction, delivery of feed materials, recovery of coal refuse, steam and heat distribution, electric power generation and transmission, ash byproducts production and distribution, and site restoration • Water usage: Potential impacts on surface and groundwater resources and withdrawal of water from the municipal sewage treatment plant • Solid waste: Pollution prevention and waste management, including ash, slag, and wastewater treatment facility sludge • Cumulative effects that result from the incremental impacts of the proposed project when added to the other past, present, and reasonably foreseeable future projects • Ecology: Potential on-site and off-site impacts to vegetation, terrestrial wildlife, aquatic wildlife, threatened and endangered species, and ecologically sensitive habitats • Connected actions: Use of heat and energy from the plant for the adjoining EcoPark • Compliance with regulatory requirements and environmental permitting • Environmental monitoring requirements • Demonstration of need for the proposed project based on demand for electricity in Greenbrier County • Consideration of alternatives other than coal refuse combustion (use of higher-grade fuels, wind or solar power, energy conservation) • Apparent dependence of power plant cost-effectiveness on the success of associated operations (EcoPark, ash byproducts production, use of ash for remediation) • Air emissions of the proposed facility based on dispersion models, ability to obtain air permits, impacts on attainment (especially ozone) of National Ambient Air Quality Standards (NAAQS), use of Best Available Control Technology (BACT), increased smog and acid rain, water vapor plumes and fog from cooling towers, air impacts on natural areas • Human health impacts of air emissions, impacts on sensitive populations, impacts from the use of treated sewage effluent for power plant operations • Water resources impacts from disturbance of the Anjean site and temporary storage of coal refuse piles, elevated stream temperatures from disposal of waste heat, reduced stream flow due to diversion of treated sewage effluent for power plant use, acid rain and mercury deposition in streams • Impacts on wetlands and flood plains from project siting, impacts on property owners caused by wetland mitigation requirements • Impacts on protected plant and animal species, terrestrial and aquatic ecosystems, including facility construction and operation as well as operations at the Anjean site • Transportation and roadway infrastructure impacts from truck transport of coal refuse and ash, impacts on traffic, and roadway safety resulting from the use of overweight trucks • Noise impacts along potential truck and rail routes for coal refuse and ash hauling; noise impacts from construction and operation of power plant and associated facilities

Table 1-1. Issues Identified for Consideration in the EIS

Issues identified in the Notice of Intent
<ul style="list-style-type: none"> • Socioeconomic impacts on the community and county, local employment, potential effects on tourism, reductions in property values near facilities, vulnerability of project economic success due to dependence on EcoPark success, impacts on taxpayers to support the project • Environmental justice issues due to the predominance of low-income households in the region • Potential impacts on historic and archeological resources • Materials and waste management impacts associated with Anjean site reclamation, storage areas for coal refuse at the plant, ash disposal and other waste products, potential radiation exposure associated with ash byproducts. • Impacts on viewsheds, especially at nearby parklands, due to visible vapor plumes; other potential impacts on recreational resources • Cumulative impacts from the construction of additional co-production plants in the region based on the successful demonstration of the proposed plant; cumulative impacts from coal mining and limestone quarrying to support the proposed plant
Further Issues Identified by the WGC Design Team
<ul style="list-style-type: none"> • Groundwater impacts from water supply wells • Capacity of existing power transmission lines to receive electricity generated by the plant • Availability of adequate sources of coal refuse in the vicinity of the proposed plant.

1.5.1.1 Comments on the Need for the Proposed Project

In the first category of comments received, most respondents commented favorably on the potential for economic stimulus and job creation offered by the proposed project. However, several respondents expressed concerns about the need for the proposed facility, both from the perspective of electricity demand and from the perspective of whether coal use is the best choice to meet that demand. A few respondents questioned whether the proposed project is an appropriate candidate for demonstration of CCPI goals. Most of these comments pertained to whether Greenbrier County needs a new generating plant, and whether the envisioned economic benefits of the proposed facility are valid, rather than whether the project would meet the DOE need to promote the goals of the CCPI Program. Although these comments are relevant to decisions WGC faces about future demand and generating capacity and about the economic risks underlying the co-production concepts, the comments are not strictly relevant to the decision facing DOE. The need for DOE to demonstrate clean coal technologies under the CCPI Program is different than the need for WGC to create local economic development. Nonetheless, the economic risks associated with the Co-Production Facility are considered in the socioeconomic analysis of Chapter 4.

1.5.1.2 Comments on Project Aspects and Alternatives

The second category of comments included concerns about the range of alternatives to be considered in the EIS. Specific comments were made to the effect that the project outcome should not be pre-determined by the choice of a low-grade fuel source (coal refuse). These respondents indicated that higher-grade coal, oil, or gas fuels would reduce emissions of air pollutants. Other respondents indicated that the EIS should include alternatives for renewable energy sources, such as wind and solar power that would reduce air pollutants, greenhouse gas emissions, and impacts on global climate change, or that the alternative of avoiding plant construction through increased energy conservation should be considered. Additional comments noted that the power plant should be evaluated on its own merits with respect to potential benefits and impacts, without assuming benefits that would be dependent on the success of the EcoPark, the unproven market for the building materials, and the uncertain effectiveness of using waste

ash to neutralize acid drainage from the Anjean coal refuse site. In light of these comments, and considering the basis for DOE's involvement through the CCPI Program, Chapter 2 discusses the alternatives evaluated in the EIS. Because DOE's principal interest in the project is related to the advancement of CCPI Program objectives, and because the use of coal refuse as a fuel source is a key feature that influenced the selection of this project by DOE, this EIS does not evaluate alternative fuel sources or generation technologies.

Other comments in this category requested information to be included in the EIS about particular project aspects. Examples include questions about the ownership of the Anjean site and responsibilities for remediation, whether DOE funding would be contingent on the use of coal refuse from Anjean, and which entity would bear responsibility for disposition if plant operations were not cost-effective. Other requests for information to be provided in the EIS were raised in questions about the commercial viability of building material byproducts, including the leaching of any hazardous substances during weathering, the proposed users for generated steam and means for disposal of the excess, other byproducts that may be generated by the plant, the number of years of coal refuse supply available, and whether the disturbance of the coal refuse piles and the temporary storage of coal refuse at other sites would cause additional remediation problems. The description of the proposed facility in Chapter 2 is intended to provide relevant project details. Where these aspects may have potentially significant environmental impacts, the respective impacts on environmental resources are discussed in Chapter 4.

1.5.1.3 Specific Environmental Concerns

In the final category of comments, respondents raised specific concerns about potential impacts on environmental resources as summarized in Table 1-1. Where the concerns addressed in these comments were determined to be within the scope of this EIS, they have been evaluated in Chapter 4. However, the following concerns were determined to be outside the reasonable scope of this EIS for the reasons stated:

- Certain alternative energy sources (high quality coal, oil, gas, solar, wind, hydro) have not been included in this EIS, because these energy sources fall outside the scope of the CCPI Program, which focuses on developing new technologies for cleaner uses of coal. There are other DOE programs for the development and commercialization of other technologies, such as gas-fired power plants and renewable energy sources. However, alternatives that would not include or benefit coal-derived energy production would not be reasonable alternatives to the proposed federal action under the CCPI Program. ***The air permit for the proposed power plant requires that only waste coal be combusted in the CFB during normal operations and, therefore, it is expected that WGC would be limited to using coal refuse during the operational phase as required under the permit. Thus,*** high-quality coal has not been considered as an alternative because the proposed use of coal refuse as a fuel source was a principal factor in the DOE's selection of the proposed project for financial assistance.
- This EIS considers the favorable and adverse impacts of the Co-Production Facility as an integrated action consisting of the power plant fueled by coal refuse from the Anjean site, the cement manufacturing facility as recipient of waste ash, and disposal of the balance of the waste ash at the Anjean site to support the neutralization of acid drainage from that site. Although the EIS has not considered the construction and operation of the power plant as an independent action separate from the features that are part of the demonstration project to be supported by the CCPI Program, the EIS considers the impacts that may result in the event that certain connected features prove to be economically infeasible.
- An evaluation of impacts related to coal mining activities and the long-term impacts from fossil fuel depletion caused by the new coal requirements in the fuel blend for the Co-Production Facility

was not evaluated because the WGC plant as currently proposed would rely on coal refuse from existing gob piles as a fuel source, without the addition of high-quality coal.

- It has been suggested that this project might serve as a model for several future projects to be undertaken by other communities in southern West Virginia. However, air emissions from this project, in combination with the air emissions from hypothetical future projects in West Virginia or elsewhere, will not be subjected to point-specific air dispersion modeling because the parameters of these other projects are too speculative. The number, locations and sizes of these future projects remain completely unknown, so there is no data for such modeling.

1.5.2 Summary of Comments Received on the Draft EIS

Comments received on the Draft EIS are detailed in Volume 3 (“Comments and Responses on the Draft EIS”). DOE has responded to these comments, including providing further information in the Final EIS, as appropriate. A summary of the major comments and revisions in the Final EIS is provided below:

- *Innovative technology and funding under the CCPI Program – Public concerns were raised about this project being selected as a facility that uses innovative BACT, and whether to use federal tax money to fund this project as a ‘clean coal’ project was questioned. In response to these concerns regarding funding, DOE has provided General Response 4.1.1 in Volume 3 that reiterates DOE’s purpose and need for this project. DOE has provided individual responses to comments on the specifics of the technology as they arise in a comment document in Volume 3. A number of commenters also questioned whether the funds for this project would be better used for another purpose. General Response 4.1.4 of Volume 3 discusses the goals of the CCPI Program and reiterates WGC’s purpose for this project. Furthermore, Section 1.2 of this chapter, which discusses the CCPI Program in more depth, has been added.*
- *Financial viability of the project - Many commenters expressed concern about the financial viability of the proposed project based on factors such as the availability of adequate fuel supplies and cooling water, as well as the marketability of the raw cement product. These comments expressed concerns about the plant being abandoned prematurely and leaving the local governments with an undue economic burden. General Response 4.1.2 is provided in Volume 3 that addresses these concerns.*
- *Need for power supply – Several commenters questioned whether another power plant is needed to supply power in West Virginia and expressed the opinion that the state has all the power it needs. The purpose and need for this project are reiterated in General Response 4.1.3 of Volume 3.*
- *Selection of alternatives analyzed – Various commenters stated that they would like to see additional alternatives analyzed, noting that the Council on Environmental Quality’s (CEQ’s) NEPA regulations [40 CFR 1502.14] require an agency to consider reasonable alternatives, including those not within the lead agency’s jurisdiction. New text has been added to Section 2.6 of Volume 1 that discuss the selection of alternatives in more detail. General Response 4.1.5 of Volume 3 discusses how the alternatives to be analyzed were chosen and why the use of alternative fuels or other energy resources were not analyzed for this EIS.*
- *Coal refuse piles and prep plant – DOE received a number of comments related to the use of coal refuse as a fuel, activities that would be undertaken to remove coal refuse materials from Anjean and other coal refuse sites, and reclamation activities that would be undertaken at the sites. To address these concerns, the responses under General Response 4.2 of Volume 3 presents additional information and clarification on several key topics: demonstration of 20-year supply (General Response 4.2.1); refuse site and prep plant operations (General Response 4.2.2); success of similar applications of ash (General Response 4.2.3); leachate of arsenic*

(General Response 4.2.4); and the management of prep plant spoils (General Response 4.2.5). Additionally, the Memo of Understanding (MOU) and the Waste Coal Access Agreement for the Anjean site have been included as Appendix N. Supporting material on case studies regarding the use of ash application as a remediation technique has been added as Appendix P. New text discussing potential water quality issues at the coal refuse sites has been added to Section 4.6.3.5 of Volume 1.

- *Air and health-related issues – Several commenters raised concerns about air and health-related topics. To address these concerns, the responses under General Response 4.3 of Volume 3 presents responses on the following key topics: the BACT analysis (General Response 4.3.1); fuel quality and impacts to air pollution and global warming (General Response 4.3.2); and mercury and acid deposition (General Response 4.3.3). A final court ruling by the West Virginia Air Quality Board (AQB) affirmed the issuance of WGC's air permit by WVDEP. A testimonial given by an air modeling expert and the findings of the AQB's final ruling have been added as Appendix O2 and O3, respectively. New text, which discusses the BACT analysis and the AQB's court ruling, has been added to Section 4.3 of Volume 1. Additionally, Sections 4.3 and 4.14 (Volume 1) includes new discussions on the HCl and HF calculations in WGC's air permit and, in light of a new PM_{2.5} standard, a reevaluation of the PM_{2.5} originally estimated in the Draft EIS.*
- *Water use – DOE received public comments related to the use of the Meadow River and local groundwater sources for plant process water. Concerns were also expressed about the potential adverse effects to the Gauley River watershed and uncertainties that were communicated in the EIS related to groundwater studies and modeling. The responses provided in General Response 4.4 of Volume 3 addresses these water use concerns. The results of a recent pumping test are discussed in Section 4.6.3.4 of Volume 1 and the report has been added as Appendix D2. New text regarding the West Virginia Division of Natural Resources' (WVDNR's) guidelines and clarification on the use of the Meadow River has been added throughout Volume 1 (Chapter 2, Section 4.4.3.3 and Section 4.6.3.4).*
- *Discharge of heated effluent – Several commenters expressed concerns about the impacts to streams from the discharge of heated effluent from the proposed facility. General Response 4.5 of Volume 3 addresses this issue.*
- *Impacts on flooding – Several commenters expressed concerns that the facility would impact the floodplain. General Response 4.6 of Volume 3 addresses this issue.*
- *Truck traffic and impacts on safety, noise, and dust – Several commenters expressed concerns that, due to the increased truck traffic related to construction and plant operations, certain roads and bridges may experience a decrease in the level of service (LOS). Also, commenters were concerned that the use of overweight trucks would increase the rates of damage to roadways, and that the increased truck traffic would cause increased noise, air pollution, accident risks and traffic congestion for local residents. These issues are addressed in General Response 4.7 of Volume 3.*
- *Incomplete and unavailable information – Several commenters raised the issue of incomplete and missing data in the EIS and stated that a revised Draft EIS or supplemental EIS should be issued. DOE has responded to these comments in General Response 4.8 of Volume 3, which also summarizes the areas where data is unavailable or incomplete in the EIS.*
- *Biological impacts resulting from the new transmission corridor – Comments were made on quantifying the wetlands impacts and discussing wildlife impacts from the new transmission corridor in the EIS. New text has been added to Section 4.7 of Volume 1 that expands on discussions that were included in the Draft EIS. The new text provides an update on WGC's wetlands encroachment permitting status with USACE and on impacts to wildlife and habitat fragmentation from the new transmission corridor.*

Volume 3 contains copies of all comment letters that were received by DOE. Individual responses to comments raised in each comment document are provided with the comment letters.

1.6 Related Actions

This section explains the relationship between this EIS and other relevant NEPA compliance documents and DOE activities. Section 1.6.1 summarizes other NEPA documents that may affect the Proposed Action or otherwise be of interest to decision-makers concerned with the Proposed Action. Section 1.6.2 provides additional information about the CCPI Program and lists the other demonstration projects selected by DOE from potential candidates in the first round of proposals.

1.6.1 Related NEPA Compliance Actions

1.6.1.1 Final Programmatic Environmental Impact Statement, Clean Coal Technology Demonstration Program, U.S. Department of Energy, November 1989

In November 1989, DOE issued the Final Programmatic EIS (PEIS) for the Clean Coal Technology (CCT) program. That program selected demonstration projects for cost-shared federal funding and was a predecessor to the CCPI Program. The PEIS addressed the potential environmental benefits and consequences in 2010 of widespread commercialization in the private sector of successfully demonstrated clean coal technologies.

Two alternatives were evaluated in the PEIS: (1) The No Action Alternative assumed that the program would not fund new initiatives and that the industry would continue to use conventional coal-fired technologies with controls to meet New Source Performance Standards (NSPS). (2) The Proposed Action alternative assumed that the program would fund selected demonstration projects and that successfully demonstrated technologies would reach widespread commercialization by 2010. For the Proposed Action, the PEIS projected changes in four environmental parameters of concern (sulfur dioxide, nitrogen oxides, carbon dioxide, and solid waste) assuming maximum commercialization of 22 generic clean coal technologies. The PEIS assumed a national mix of energy supply components consistent with the long-range projections of the National Energy Policy Plan (NEPP-V) in effect at the time. The national mix included liquids, gas, nuclear, renewable sources, hydro, and other components in addition to coal. The PEIS assumed that the national mix would remain constant for the Proposed Action and No Action Alternative and considered only changes in the four parameters of concern that would occur between the two alternatives relating to coal use.

Among the 22 generic clean coal technologies considered in the PEIS, two fluidized-bed processes were evaluated (Circulating Atmospheric Fluidized-Bed and Pressurized Fluidized-Bed). The PEIS projected that maximum commercialization of the Circulating Atmospheric Fluidized-Bed technology could result in a 44 percent reduction in sulfur dioxides, 17 percent reduction in nitrogen oxides, 5 percent reduction in carbon dioxides, and 8 percent increase in solid waste in 2010 compared to the No Action Alternative with the same use of coal in the national mix of energy supply. The study also projected that maximum commercialization of the Pressurized Fluidized-Bed technology could result in a 48 percent reduction in sulfur dioxides, 17 percent reduction in nitrogen oxides, 8 percent reduction in carbon dioxides, and 4 percent reduction in solid waste in 2010 compared to the No Action Alternative. These changes were considered to be significant and, along with favorable reductions demonstrated by the other clean coal technologies evaluated, were considered to provide potentially significant beneficial effects on air quality for the Proposed Action (CCT implementation) compared to the No Action Alternative.

The PEIS provided a basis for DOE decision-making in the selection of proposed projects for cost-shared federal funding. The PEIS also stated that: "Site-specific NEPA documentation will be prepared for each project selected by DOE for cost-shared funding and will be made publicly available."

1.6.2 Related DOE Activities

CCPI is a multi-year program funded at a total federal cost of up to \$2 billion with the private sector sharing at least 50 percent of the cost. Through competitive selection, the program funds organizations that can develop promising new concepts rapidly to a point enabling private sector decisions on deployment. CCPI builds on the successful accomplishments of the joint government-industry Clean Coal Technology (CCT) program in the 1980s and 1990s that helped achieve sharp declines in pollutant emissions from U.S. power plants.

The CCPI Program is driven by research and innovations in the private sector. Potential applicants include industry, manufacturing and service corporations, research and development firms, energy producers, software developers, academia, and other interested parties. Selected projects address needs not being met by the private sector and technologies that have not been proven commercially in the United States. Key selection criteria include the applicability to existing or future advanced energy systems and the potential for substantial public benefit.

The WGC facility is one of eight projects selected competitively for further consideration during January 2003 from among 33 applicants during the first round of proposals submitted under the CCPI Program. The other seven projects are:

- **Great River Energy - Increasing Power Plant Efficiency through Lignite Fuel Enhancement.** The objective of this project at the Great River Energy Coal Creek Station in Underwood, North Dakota, is to demonstrate moisture reduction of lignite coal using waste heat, thereby increasing its value as a fuel in power plants.
- **Colorado Springs Utilities – Integration of Advanced Emissions Controls to Produce Next-Generation Circulating Fluid Bed Generation Unit.** This project aims to layer low-cost emission-control technologies in a way that achieves better environmental performance than current state-of-the-art circulating fluidized bed systems. (Withdrawn)
- **Commercial Demonstration of the Airborne Process.** This project is a full-scale demonstration of advanced emission control technologies integrated with existing emissions control equipment. The host site is the 524 MW Unit 2 at the LG&E Energy Corporation's Ghent Generating Station, located near Carrollton, Kentucky. (Withdrawn)
- **Demonstration of Integrated Optimization Software at the Baldwin Energy Complex.** For this project, NeuCo, Inc. will demonstrate integrated on-line optimization systems at Dynegy Midwest Generation's Baldwin Energy Complex in Baldwin, Illinois.
- **Advanced Multi-Product Coal Utilization By-Product Processing Plant.** The University of Kentucky Research Foundation in partnership with LG&E Energy Corporation will design, construct, and demonstrate an advanced coal-ash beneficiation processing plant at the 2,200 MW Ghent Generating Station near Carrollton, Kentucky.
- **TOXECON Retrofit for Mercury and Multi-Pollutant Control on Three 90 MW Coal-Fired Boilers.** Wisconsin Electric Power Company will design, install, operate, and evaluate the TOXECON process as an integrated emissions control system for mercury, particulate matter, SO₂, and NO_x at the Presque Isle Power Plant in Marquette, Michigan.
- **Gilberton Coal-to-Clean Fuels and Power Project.** WMPI PTY, LLC of Gilberton, Pennsylvania has assembled a team to design, engineer, construct, and demonstrate the first clean coal power facility in the United States using coal refuse gasification as the basis for clean power, thermal energy and clean liquid fuels production.

1.6.3 Related Regional Activities

Invenergy Wind LLC of Chicago, Illinois is currently planning a wind-powered electricity generation project in northern Greenbrier County. The project would have a nominal average generating capacity of 40 to 45 MWe, with a peak generating capacity of approximately 200 MWe, and it would be sited on Field Mountain east of the Grassy Falls Substation. The Invenergy project information was submitted to PJM (Pennsylvania-Jersey-Maryland) Interconnection, and it has been identified as PJM Project #M24. PJM is the regional transmission organization (RTO) that coordinates the movement of wholesale electricity in the region and is responsible for maintaining the integrity of the regional power grid, and for managing changes and additions to the grid to accommodate new generating plants, substations and transmission lines. PJM has reviewed the proposed connection to the regional power grid by the WGC power plant based on the anticipated completion and connection of the Invenergy project. The results of the PJM Impact Study Report are discussed in Section 4.12 of this EIS.

1.7 CCPI Program Considerations Under NEPA

The CCPI Program only allows for joint funding of proposed projects that have been selected through a solicitation and negotiation process. In March 2002, DOE issued the first round CCPI solicitation. Private sector participants submitted proposals in response to the solicitation. A group of proposals, representing diverse technologies and using a variety of coals, was selected to further the goals of the CCPI Program. DOE's choices were limited by virtue of having to choose from the proposals that were submitted under the solicitation process. The proposed project was selected under the first round of the CCPI Program because of the opportunity to demonstrate the specific technology proposed: a Co-Production Facility based on an innovative atmospheric-pressure circulating fluidized-bed (ACFB) boiler with a compact inverted-cyclone design. Other projects that proposed to demonstrate other technologies are not alternatives to the proposed project for NEPA purposes.

As such, DOE cannot now choose alternative technologies or sites that would undermine any of the unique features that DOE considered when approving WGC's application for funding under the CCPI and entering into a cooperative agreement with WGC to provide that funding. For example, an alternative plant design that would result in a plant larger than those analyzed in this EIS would undermine one of the key advantages of the inverted cyclone design, which is to reduce the footprint of the plant. Such alternative technologies or sites are unreasonable.

The scope of this EIS includes potential impacts that the proposed project may have on the natural and human environment in the region of influence. The region of influence for the proposed project will depend upon the environmental resource affected. The site for the proposed project, the associated EcoPark, and the coal refuse sites represent the narrowest regions of influence in which environmental resources may be affected. For some resources, such as biological and cultural resources, the region of influence may extend beyond these sites into lands adjacent to the property boundaries. For other resources, such as socioeconomics and transportation, the region of influence may encompass the surrounding local communities. Even other resources, such as air quality, may have regions of influence that extend beyond municipal and county boundaries.